SEQUENCE LISTING

<110> Barbas, Carlos F.
      Burton, Dennis R.
      Lerner, Richard A.

<120> Methods for producing antibody libraries
  using universal or randomized immunoglobulin light chains

<130> TSRI 409.1D2

<140> US 09/610,551
<141> 2000-07-05

<150> US 08/931,645
<151> 1997-09-16

<150> US 08/300,386
<151> 1994-09-02

<150> US 08/174,674
<151> 1993-12-28

<150> US 07/826,623
<151> 1992-01-27

<160> 74

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 687
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 1
ctcgagcagt ctggggctga ggtgaagaag cctgggtcct cggtgaaggt ctcctgcagg 60
gcttctggag gcaccttcaa caattatgcc atcagctggg tgcgacaggc ccctggacaa 120
gggcttgagt ggatgggagg gatcttccct ttccgtaata cagcaaagta cgcacaacac 180
ttccagggca gagtcaccat taccgcggac gaatccacgg gcacagccta catggagctg 240
agcagcctga gatctgagga cacggccata tattattgtg cgagagggga tacgattttt 300
ggagtgacca tgggatacta cgctatggac gtctggggcc aagggaccac ggtcaccgtc 360
tccgcagcct ccaccaaggg cccatcggtc ttccccctgg caccctcctc caagagcacc 420
tctgggggca gcggccctg gggctgcctg gtcaaggact acttccccga accggtgacg 480
gtgtcgtgga actcaggcgc cctgaccagc ggcgtgcaca ccttcccggc tgtcctacag 540
tcctcaggac tctactccct cagcagcgtg gtgaccgtgc cctccagcag cttgggcacc 600
cagacctaca tctgcaacgt gaatcacaag cccagcaaca ccaaggtgga caagaaagca 660
gagcccaaat cttgtgacaa aactagt                                     687

<210> 2
<211> 646
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 2

409.1D2.TXT

gagctcacgc agtctccagg caccctgtct ttgtctccag gggaaagagc caccctctcc 60
tgcagggcca gtcacagtgt tagcagggcc tacttagcct ggtaccagca gaaacctggc 120
caggctccca ggctcctcat ctatggtaca tccagcaggg ccactggcat cccagacagg 180
tccagtggca gtgggtctgg gacagacttc actctcacca tcagcagact ggagcctgaa 240
gattttgcag tgtactactg tcagcagtat ggtggctcac cgtggttcgg ccaagggacc 300
aaggtggaac tcaaacgaac tgtggctgca ccatctgtct tcatcttccc gccatctgat 360
gagcagttga aatctggaac tgcctctgtt gtgtgcctgc tgaataactt ctatcccaga 420
gaggccaaag tacagtggaa ggtggataac gccctccaat cgggtaactc caggagagt 480
gtcacagagc aggacagcaa ggacagcacc tacagcctca gcagcaccct gacgctgagc 540
aaagcagact acgagaaaca caaagtctac gcctgcgaag tcacccatca gggcctgagt 600
tcgcccgtca caaagagctt caacagggga gagtgttaat tctaga 646

<210> 3
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 3
gaattctaaa ctagctagtc g                                              21

<210> 4
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 4
atactgctga cagtaataca c                                              21

<210> 5
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30
<223> k = G or T

<400> 5
tattactgtc agcagtatnn knnknnknnk actttcggcg gagggaccaa ggtggag       57

<210> 6
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 6
aatacgactc actatagggc g                                              21

Page 2

<210> 7
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30
<223> k = G or T

<400> 7
tattactgtc agcagtatnn knnknnknnk actttcggcg gagggacc                48

<210> 8
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29, 31, 32
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30, 33
<223> k = G or T

<400> 8
tattactgtc agcagtatnn knnknnknnk nnkactttcg gcggagggac caaggtggag 60

<210> 9
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29, 31, 32
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30, 33
<223> k = G or T

<400> 9
tattactgtc agcagtatnn knnknnknnk nnkactttcg gcggagggac c           51

<210> 10
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 31, 32, 34, 35, 37, 38, 40, 41, 43, 44, 46, 47
<223> n = G, A, T, or C

<221> modified_base
<222> 33, 36, 39, 42, 45, 48
<223> k = G or T

<400> 10
gattttgcag tgtattactg tcagcagtat nnknnknnkn nknnknnkac tttcggcgga 60
gggaccaagg tggag                                                    75

<210> 11
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34, 35
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30, 33, 36
<223> k = G or T

<400> 11
tattactgtc agcagtatnn knnknnknnk nnknnkactt tcggcggagg gacc          54

<210> 12
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 22, 23, 25, 26, 28, 29, 31, 32, 34, 35, 37, 38, 40, 41, 43,
44, 46, 47, 49, 50
<223> n = G, A, T, or C

<221> modified_base
<222> 24, 27, 30, 33, 36, 39, 42, 45, 48, 51
<223> k = G or T

<400> 12
gattttgcag tgtattactg tnnknnknnk nnknnknnkn nknnknnknn kttcggcgga 60
gggaccaagg tggag                                                    75

<210> 13
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 26, 29, 32, 35, 38, 41, 44, 47
<223> m = A or C

<221> modified_base
<222> 27, 28, 30, 31, 33, 34, 36, 37, 39, 40, 42, 43, 45, 46, 48, 49
<223> n = G, A, T, or C

<400> 13
gttccacctt ggtcccttgg ccgaamnnmn nmnnmnnmnn mnnmnnmnna cagtagtaca 60
ctgcaaaatc                                                       70

<210> 14
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 26, 29, 32, 35, 38, 41, 44, 47, 50, 53
<223> m = A or C

<221> modified_base
<222> 27, 28, 30, 31, 33, 34, 36, 37, 39, 40, 42, 43, 45, 46, 48, 49, 51, 52, 54, 55
<223> n = G, A, T, or C

<400> 14
gttccacctt ggtcccttgg ccgaamnnmn nmnnmnnmnn mnnmnnmnnm nnmnnacagt 60
agtacactgc aaaatc                                                76

<210> 15
<211> 94
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71
<223> m = A or C

<221> modified_base
<222> 27, 28, 30, 31, 33, 34, 36, 37, 39, 40, 42, 43, 45, 46, 48, 49, 51, 52, 54, 55, 57, 58, 60, 61, 63, 64, 66, 67, 69, 70, 72, 73
<223> n = G, A, T, or C

<400> 15
gttccacctt ggtcccttgg ccgaamnnmn nmnnmnnmnn mnnmnnmnnm nnmnnmnnmn 60
nmnnmnnmnn mnnacagtag tacactgcaa aatc                             94

<210> 16
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 16
ttcggccaag ggaccaaggt ggaac                                                    25

<210> 17
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 17
gcaattaacc ctcactaaag gg                                                       22

<210> 18
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 18
tctcgcacag taatacacgg ccgt                                                     24

<210> 19
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 22, 23, 25, 26, 28, 29
<223> n = G, A, T, or C

<221> modified_base
<222> 24, 27, 30
<223> k = G or T

<400> 19
gccgtgtatt actgtgcgag annknnknnk gacnnktggg gccaagggac cacggtc      57

<210> 20
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 20
ttgatattca caaacgaatg g                                                        21

<210> 21
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 25, 26, 28, 29, 31, 32, 34, 35, 37, 38, 40, 41, 43, 44
<223> n = G, A, T, or C

<221> modified_base
<222> 27, 30, 33, 36, 39, 42, 45
<223> k = G or T

<400> 21
gccgtgtatt actgtgcgag aggtnnknnk nnknnknnkn nknnkgacnn ktggggccaa 60
gggaccacgg tc                                                    72

<210> 22
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 25, 26, 28, 29, 31, 32, 34, 35, 37, 38, 40, 41, 43, 44, 46,
47, 49, 50, 52, 53, 55, 56, 58, 59, 61, 62, 67, 68
<223> n = G, A, T, or C

<221> modified_base
<222> 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 69
<223> k = G or T

<400> 22
gccgtgtatt actgtgcgag aggtnnknnk nnknnknnkn nknnknnknn knnknnknnk 60
nnkgacnnkt ggggccaagg gaccacggtc                                 90

<210> 23
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29, 31, 32
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30, 33
<223> s = G or C

<400> 23
gtgtattatt gtgcgagann snnsnnsnns nnstggggcc aagggaccac g           51

<210> 24
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34, 35, 37, 38, 40,
41, 43, 44, 46, 47
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30, 33, 36, 39, 42, 45, 48
<223> s = G or C

<400> 24
gtgtattatt gtgcgagann snnsnnsnns nnsnnsnnsn nsnnsnnstg gggccaaggg 60
accacg                                                            66

<210> 25
<211> 84
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34, 35, 37, 38, 40,
41, 43, 44, 46, 47, 49, 50, 52, 53, 55, 56, 58, 59, 61,
62, 64, 65
<223> n = G, A, T, or C

<221> modified_base
<222> 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63,
66
<223> s = G or C

<400> 25
gtgtattatt gtgcgagann snnsnnsnns nnsnnsnnsn nsnnsnnsnn snnsnnsnns 60
nnsnnstggg gccaagggac cacg                                        84

<210> 26
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 26
tatactgtca gcagtat                                                17

<210> 27
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 27
gattttgcag tgtattactg tcagcagtat                                  30

<210> 28
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 28
actttcggcg gagggaccaa ggtggag                                           27

<210> 29
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 29
actttcggcg gagggacc                                                     18

<210> 30
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 30
gttccacctt ggtcccttgg ccgaa                                             25

<210> 31
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 31
acagtagtac actgcaaaat c                                                 21

<210> 32
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 32
Gly Trp Ser Arg Trp Ser Gly Leu Asp Trp
1               5                   10


<210> 33
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 33
Ser Ser Thr Lys Ile Met Arg Leu Asp Thr
1               5                   10

<210> 34
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 34
Gly Met Phe Arg Arg Gly Phe Tyr Asp Arg
1               5                   10


<210> 35
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 35
Gly Val Arg Asn Asn Phe Gly Arg Trp His Trp Val Trp Asp Ser
1               5                   10                  15


<210> 36
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 36
Gly Arg Ala Val Arg Gly Ser Arg Lys Arg Val Leu Gly Tyr Asp Arg
1               5                   10                  15


<210> 37
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 37
Gly Arg Pro Gly Val Val Arg Arg Arg Ile Ala Pro Arg Met Asp Ile
1               5                   10                  15


<210> 38
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 38

Gly Pro Lys Gly Val Phe Pro Arg Trp Gly Met Ala Ser Phe Asp Arg
1               5                   10                  15


<210> 39
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 39
Gly Val Asn Leu Phe Arg Val Arg Asn Ser Arg Pro His Leu Asp Met
1               5                   10                  15


<210> 40
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 40
Gly Leu Arg Gly Ser Arg Gly Phe Asp Arg
1               5                   10


<210> 41
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 41
Gly Ser Trp Leu Arg Gly Pro Tyr Asp Met
1               5                   10


<210> 42
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 42
Gly Thr Leu Gly Glu Gly Gly Tyr Asp Arg
1               5                   10


<210> 43
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 43
Gly Trp Arg Ser Ser Arg Gly Val Val Trp Val Phe Ser Gly Asp Ala
1               5               10              15


<210> 44
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 44
Gly Asp Trp Gly Trp Phe Thr Arg Val Ala Thr Trp Arg Pro Asp Val
1               5               10              15


<210> 45
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 45
Gln Gln Tyr Leu Pro Gly Gly Arg Tyr Thr
1               5               10


<210> 46
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 46
Gln Gln Tyr Arg Val Glu Gly Gln Thr
1               5


<210> 47
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 47
Gln Gln Tyr Gly Gly Ser Pro Trp
1               5


<210> 48
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 48
Gln Gln Tyr Ser Arg His Arg Phe Thr
 1               5


<210> 49
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 49
Gln Gln Tyr Arg Tyr Pro Leu Ile Trp Thr
 1               5                   10


<210> 50
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 50
Gln Gln Tyr Gly Ser Ser Leu Trp Thr
 1               5


<210> 51
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 51
Gln Gln Tyr Thr Arg Pro Gly Val Thr
 1               5


<210> 52
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 52
Gln Gln Tyr Ser Phe Lys Asn Trp Thr
 1               5


<210> 53
<211> 9
<212> PRT

409.1D2.TXT

<213> Artificial Sequence

<220>
<223> Synthesized

<400> 53
Gln Gln Tyr Gly Tyr Arg Lys Trp Thr
 1               5


<210> 54
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 54
Gln Gln Tyr Thr Pro Arg Arg Gly Ala Thr
 1               5                   10


<210> 55
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 55
Gln Gln Tyr Thr Pro Arg Val Gly His Thr
 1               5                   10


<210> 56
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 56
Gln Gln Tyr Lys Tyr Gly Arg Gly Met Thr
 1               5                   10


<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 57
Gln Gln Tyr Gly Lys Lys Gln Trp Thr
 1               5


<210> 58

Page 14

<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 58
Gln Gln Tyr Val Arg Arg Ser Gly Thr
 1               5


<210> 59
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 59
Gln Gln Tyr Gly Lys Arg Ser Pro Val Thr
 1               5                   10


<210> 60
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 60
Gln Gln Tyr Ala Arg Ala Thr Gly Leu Thr
 1               5                   10


<210> 61
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 61
Gln Gln Tyr Ser Arg Phe Val Ser Arg Thr
 1               5                   10


<210> 62
<211> 280
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 62
gagctcaccc agtctccatc ctccctgtct gcatctgtag gagacagagt caccatcact 60
tgccgggcaa gtcagcgcat tagcagctat ttaaattggt atcagcagga accaggggaa 120
gcccctaagc tcctgatcta tgctgcatcc aggtttgcaa agtggggtcc catcaaggtt 180

cagtggcagt ggatctggga cagatttcac tctcaccatc agcagtctgc aacctgaaga 240
ttttgcaact tactactgtc aacagagtta cagtaccccg 280

<210> 63
<211> 124
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 63
Leu Glu Ser Gly Gly Asp Leu Val Gln Pro Gly Gly Ser Leu Arg Leu
1               5                   10                  15
Ser Cys Glu Ala Ser Gly Phe Thr Phe Gly Ser Tyr Ala Met Thr Trp
            20                  25                  30
Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Ser Pro Ser
        35                  40                  45
Ala Asn Gly Asp Phe Ala Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe
    50                  55                  60
Thr Ile Ser Arg Asp Lys Ser Lys His Thr Leu Phe Leu Gln Met His
65                  70                  75                  80
Ser Leu Arg Val Glu Asp Thr Ala Val Tyr Tyr Cys Ala Lys Ala Gly
                85                  90                  95
Arg Ile Leu Gly Val Val Leu Trp Tyr Ser Leu Tyr Tyr Gly Phe Asp
            100                 105                 110
Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
            115                 120

<210> 64
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 64
Leu Glu Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Lys
1               5                   10                  15
Val Ser Cys Lys Ala Ser Gly Tyr Asn Phe Asn Ser His Asp Ile Asn
            20                  25                  30
Trp Val Arg Gln Ala Thr Gly Gln Gly Leu Glu Trp Ile Gly Trp Ile
        35                  40                  45
Thr Asn Arg Gly Thr Thr Ser Arg Tyr Ala Gln Lys Phe Gln Gly Arg
    50                  55                  60
Val Thr Met Thr Arg Asp Ala Ser Ile Ser Thr Val Tyr Met Glu Leu
65                  70                  75                  80
Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly
                85                  90                  95
Ala Gly Ala Gly Gly Thr Trp Gly Met Asp Val Trp Gly Gln Gly Thr
            100                 105                 110
Thr Val Ile Val Ser Ser
            115

<210> 65
<211> 119
<212> PRT
<213> Artificial Sequence

<220>

Page 16

409.1D2.TXT

<223> Synthesized

<400> 65
Gln Val Lys Leu Leu Glu Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Gly His
                20                  25                  30
Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45
Gly Trp Ile Ser Pro Asn Arg Gly Ala Thr Arg Phe Ala Gln Lys Phe
    50                  55                  60
Gln Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Asn Thr Val Tyr
65                  70                  75                  80
Met Glu Leu Ser Gly Leu Arg Phe Asp Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95
Ala Thr Thr Arg Thr Ala Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly
            100                 105                 110
Thr Thr Val Thr Val Ser Ser
            115


<210> 66
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 66
Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg
1               5                   10                  15
Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Tyr Ile Asn
                20                  25                  30
Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Ala
        35                  40                  45
Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly
    50                  55                  60
Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp
65                  70                  75                  80
Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Pro Phe Thr Phe
            85                  90                  95
Cys Pro Gly Thr Lys Val Asp Ile Lys Arg Thr
            100                 105


<210> 67
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 67
Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg
1               5                   10                  15
Val Thr Ile Thr Cys Arg Ala Ser Gln Arg Ile Ser Ser Tyr Ile Asn
                20                  25                  30
Trp Tyr Gln Gln Glu Lys Pro Gly Ala Pro Lys Leu Leu Ile Tyr Ala
        35                  40                  45
Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly
    50                  55                  60

Page 17

```
Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp
65              70              75                      80
Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Pro Tyr Thr Phe
                85              90                  95
Cys Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr
                100             105
```

<210> 68
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 68
```
Glu Leu Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Glu Gly
 1               5               10                      15
Asp Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Ser Arg Tyr
                20              25              30
Ser Asn Trp Tyr Gln Gln Gln Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35              40              45
Ser Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
    50              55              60
Ser Gly Ser Gly Thr His Phe Thr Leu Thr Ile Asn Ser Leu Gln Pro
65              70              75                      80
Gly Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Thr Tyr Ser Ser Pro Phe
                85              90                  95
Thr Phe Cys Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr
                100             105
```

<210> 69
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 69
```
Glu Leu Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1               5               10                      15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Thr Ile Gly Thr Tyr
                20              25              30
Ile Asn Trp Tyr Gln Gln Lys Pro Gly Glu Ala Pro Lys Leu Leu Ile
        35              40              45
Tyr Thr Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Arg Gly
    50              55              60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65              70              75                      80
Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Pro Trp
                85              90                  95
Thr Phe Cys Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
                100             105
```

<210> 70
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 70
Glu Leu Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1               5                   10                  15
Asp Arg Val Thr Ile Ser Gly Cys Arg Ala Ser Gln Asn Ile Gly Lys
            20                  25                  30
Tyr Ile Asn Trp Tyr Arg Gln Lys Pro Gly Lys Ala Pro Glu Leu Leu
        35                  40                  45
Ile Tyr Gly Thr Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser
    50                  55                  60
Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln
65                  70                  75                  80
Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Tyr Ser Thr Pro
                85                  90                  95
Trp Thr Phe Cys Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
            100                 105                 110


<210> 71
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 71
Arg Ala Ser Ser Asn Ile Ser Ser Tyr Ile Asn
1               5                   10


<210> 72
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthesized

<400> 72
Arg Ala Ser Glu Asn Ile Ser Ser Tyr Ile Asn
1               5                   10


<210> 73
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23,
25, 26, 28, 29, 31, 32, 34, 35, 37, 38, 40, 41, 43, 44,
46, 47, 49, 50, 52, 53, 55, 56, 58, 59, 61, 62, 64, 65,
67, 68, 70, 71
<223> N = G, A, T, or C

<221> modified_base
<222> 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45,

409.1D2.TXT

48, 51, 54, 57, 60, 63, 69, 72
<223> k = G or T

<221> misc_feature
<222> (1)...(72)
<223> This sequence may encompass 3 to about 24 repeats
      of the NNK nucleotide motif

<400> 73
nnknnknnkn nknnknnknn knnknnknnk nnknnknnkn nknnknnknn knnknnknnk 60
nnknnknnkn nk                                                    72

<210> 74
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthesized

<221> modified_base
<222> 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43,
46, 49, 52, 55, 58, 61, 64, 67, 70
<223> M = A or C

<221> modified_base
<222> 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, 20, 21, 23, 24,
26, 27, 29, 30, 32, 33, 35, 36, 38, 39, 41, 42, 44, 45,
47, 48, 50, 51, 53, 54, 56, 57, 59, 60, 62, 63, 65, 66,
68, 69, 71, 72
<223> N = G, A, T, or C

<221> misc_feature
<222> (1)...(72)
<223> This sequence may encompass 3 to about 24 repeats
      of the MNN motif

<400> 74
mnnmnnmnnm nnmnnmnnmn nmnnmnnmnn mnnmnnmnnm nnmnnmnnmn nmnnmnnmnn 60
mnnmnnmnnm nn                                                    72

Page 20